

DEC 06 2006

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

INTERAGENCY AGREEMENT RW89942106-01-0

Robert P. Gordon
Contracting Officer
Administration and Financial Management Division
Department of Energy-Brookhaven National Lab
12 South Upton
Upton, NY 11973

Dear Mr. Gordon:

I am forwarding to you for review and acceptance four signed copies of EPA Interagency Agreement No. RW89942106-01-0 (Superfund Contamination Sediment Processing and Decontamination Technology Demonstration Project).

If you wish to accept the agreement, please sign all four copies and return three signed copies to me at the address in item 6 of the agreement form. Your copy with the official signatures should be retained by your agency. Your early attention will be appreciated.

Sincerely,

John M. Owen
Grants Management Specialist

Attachments

cc: Keith W. Jones, DOE-BNL

bcc: Eric Stern, DEPP ✓
IAG Folder RW89942106-01-0



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

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Sincerely,

A handwritten signature in black ink, appearing to read "John M. Owen".

John M. Owen
Grants Management Specialist

Attachments

cc: Keith W. Jones, DOE-BNL



United States Environmental
Protection Agency
Washington, DC 20460

Interagency Agreement

Amendment

Part 1 - General Information

Page 1

1. EPA IAG Identification Number
DW-89-94210601 - 0

4. Funding Location by Region
EPA R2

2. Other Agency IAG ID Number

5. Program Office
Abbreviation
Region 2

3. Type of Action
New

6. Name and Address of EPA Organization
US Environmental Protection Agency
Division of Environmental Planning and Protection
290 Broadway, 27th Floor
New York, NY 10007-1866
DUNS: 029128894

7. Name and Address of Other Agency
Department of Energy-Brookhaven National Lab
12 South Upton
Upton, NY 11973
DUNS: 038150264

8. Project Title and Description
Superfund Contaminated Sediment Processing and Decontamination Technology Demonstration
Funds will be allocated to support the materials handling, processing, sediment decontamination, and beneficial use applications of Passaic River, NJ contaminated sediments. This work is being conducted in partnership with Superfund and the DEPP NY/NJ Harbor Sediment Decontamination Program.

9. EPA Project Officer (Name, Address, Phone Number)
Eric Stern
290 Broadway, 24th Floor
New York, NY 10007-1866
212-637-3806

10. Other Agency Project Officer (Name, Address, Phone Number)
Keith W. Jones
12 South Upton
Upton, NY 11973
631-344-4588

11. Project Period
01/01/2007 to 06/30/2007

12. Budget Period
01/01/2007 to 06/30/2007

13. Scope of Work
See attached scope of work
EPA Grants Specialist for this IAG is John Owen 212-637-3415

14. Statutory Authority for Both Transfer of Funds and Project Activities
Economy Act of 1932 As Amended

15. Other Agency Type
Federal Agency

Funds	Previous Amount	Amount This Action	Amended Total
16. EPA Amount		\$500,000	\$500,000
17. EPA In-Kind Amount			\$0
18. Other Agency Amount			\$0
19. Other Agency In-Kind Amt.			\$0
20. Total Project Cost		\$500,000	\$500,000

21. Fiscal

Site Name	DCN	FY	Approp.	Budget Org.	PRC	Object	Site/Project	Cost Org.	Obligation
	HE0019	2007	TR2B	02D	302DD2C	2507	0296C002	C002	500,000
									500,000

Part II - Approved Budget		EPA IAG Identification Number DW-89-94210601 - 0
22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	\$50,000	\$50,000
(b) Fringe Benefits		\$0
(c) Travel		\$0
(d) Equipment		\$0
(e) Supplies		\$0
(f) Procurement / Assistance	\$450,000	\$450,000
(g) Construction		\$0
(h) Other		\$0
(i) Total Direct Charges	\$500,000	\$500,000
(j) Indirect Costs: Rate % Base \$	\$0	\$0
(k) Total (EPA Share 100.00 %) (Other Agency Share 0.00 %)	\$500,000	\$500,000
23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Identify all equipment costing \$1,000 or more)		
24. Are any of these funds being used on extramural agreements? (See Item 22f.) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Type of Extramural Agreement <input type="checkbox"/> Grant <input type="checkbox"/> Cooperative Agreement <input checked="" type="checkbox"/> Procurement		
Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Gas Technology Institute/Endesco	450000 Total \$ 450,000.00	100
Part III - Funding Methods and Billing Instructions		
25. (Note: EPA Agency Location Code (ALC) - 68010727)		
<input checked="" type="checkbox"/> Disbursement Agreement <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Repayment <input type="checkbox"/> Advance </div> <div> Request for repayment of actual costs must be itemized on SF 1080 and submitted to the Financial Management Office, Cincinnati, OH 45268-7002: <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Upon Completion of Work Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268-7002. </div> </div> <input type="checkbox"/> Allocation Transfer-Out Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Hdqtrs. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington, DC 20460.		
26. <input type="checkbox"/> Reimbursement Agreement <input type="checkbox"/> Repayment <input type="checkbox"/> Advance <input type="checkbox"/> Allocation Transfer-In		
Funding Agency's Treasury Symbol <input type="checkbox"/> One-Year <input type="checkbox"/> Two-Year <input type="checkbox"/> No-Year		
Other Agency's IAG Identification Number		EPA Program Office Allowance Holder/Resp. Center No. 27
Other Agency's Billing Address (include ALC or Station Symbol Number)		Other Agency's Billing Instructions and Frequency

Part IV - Acceptance Conditions

EPA Identification Number

DW-89-94210601 - 0

27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

28. Special Conditions (Attach additional sheets if needed)**Part V - Offer and Acceptance**

Note: 1) For Disbursement actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in item 29 after acceptance signature.

Receipt of a written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of offer by EPA. Any change to the agreement/amendment by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

2) For Reimbursement actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)**EPA Program Office (for technical assistance)****29. Organization/Address**

US EPA R2
Grants and Contracts Management
290 Broadway, 27th Floor
New York, NY 10007-1866

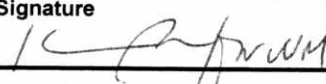


30. Organization/Address

US Environmental Protection Agency
Region 2
290 Broadway, 24th Floor
New York, NY 10007-1866

Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statements may be punishable by fine or imprisonment or both under applicable law.

Decision Official on Behalf of the Environment Protection Agency Program Office

31. Signature 	Typed Name and Title Walter E. Mugdan, Director	Date 11/29/06
Action on Behalf of the Environment Protection Agency		
32. Signature 	Typed Name and Title Donna J. Vizian, Assistant Regional Administrator for Policy and Management	Date 12/05/06
Authorizing Official on Behalf of the Other Agency		
33. Signature 	Typed Name and Title Robert P. Gordon, Contracting Officer, Admin. and Fin. Mgt. Div.	Date

IAG Terms and Conditions

1. If an audit determines that any direct or indirect costs charged to EPA are unallowable, EPA will be notified immediately following resolution of the audit and EPA will be credited for those costs.

2. In accordance with Public Law 102-389, EPA's policy requires, to the fullest extent possible, that at least 8% of its overall Federal funding for prime and subcontracts awarded in support of authorized programs be awarded to business concerns or other organizations owned or controlled by socially and economically disadvantaged individuals, including historically Black colleges and universities and women.

Consistent with this policy the Department of Energy agrees, in awarding contracts under this IAG, to comply with the utilization requirements for Minority Business Enterprises (MBEs) and Women's Business Enterprises (WBEs) set negotiated with the Small Business Administration (SBA).

The Department of Energy agrees to submit a report to EPA showing the total amount of procurement dollars awarded and the amount and percentage of such funds awarded to MBEs and WBEs by November 15 of the current year. Reports should be submitted to:

Office of Small and Disadvantaged Business Utilization
U.S. Environmental Protection Agency
401 M. Street, S.W. (Mailcode:1230)
Washington, D.C. 20460

FY 07 Work Plan
Superfund Contaminated Sediment Processing and Decontamination Technology
Demonstration

IAG DW94210601-0

PROJECT ABSTRACT

Thermo-Chemical Processing and Sediment Decontamination of Passaic River, NJ
Contaminated Sediments at the GTI Rotary Kiln Facility, Bayonne, NJ

Sediments found in the Port of New York/New Jersey are often contaminated with both organic and inorganic compounds at elevated concentrations. The contaminants make placement/disposal of dredged materials a challenge with respect to maintaining and improving navigational channels for deeper draft vessels in the Port. In parallel, environmental remediation and restoration projects may also generate substantial volumes of contaminated sediments and soils that require responsible methods for material handling and disposal. Since 1994 the U. S. Environmental Protection Agency Region 2 (EPA), working with the Department of Energy – Brookhaven National Laboratory and since 1998, the NJ Department of Transportation has carried out an extensive program to develop and apply innovative sediment decontamination technologies for removal of the contaminants from the sediments followed by creation of beneficial use end products (manufactured soils, cement, light-weight aggregate, bricks and tiles). The program has progressed through the stages of testing technologies on the bench-, pilot-, and full-scale/commercial levels. One technology that has been developed and extensively tested is the application of a high-temperature-chemical treatment utilizing a rotary kiln developed by the Gas Technology Institute (GTI), a not-for profit research facility in Des Plaines, Illinois. The "Cement-Lock" process destroys organic compounds and fixes or immobilizes the inorganic materials in the molten slag produced in the process. The slag is then used for production of a marketable construction-grade cement product. In 2004-2005, GTI conducted a test of 400 cubic yards of de-watered navigational dredged material from upper Newark Bay, NJ using a 15,000 cubic yard/year capacity demonstration kiln located at the IMTT tank farm located in Bayonne, NJ. The purpose of the present scope of work is to use the Cement-Lock technology with enhanced mechanical improvements/retrofits to decontaminate 300 cubic yards of dewatered sediment from the lower Passaic River, NJ Superfund site with the post-treated material to be used for beneficial use. Working in collaboration with the EPA Region 2 Superfund Program, US Army Corps of Engineers, NJDOT and the lower Passaic River Restoration Study Project Team, this project will further hope to demonstrate that the Cement-Lock process can be used as a viable and cost-effective technology / integrated sediment management component in a remediation and restoration plan for the lower EPA Passaic River Focused Feasibility Study.

I. Collaborators:

Work is to be performed by the U.S. Department of Energy - Brookhaven National Laboratory, Environmental Sciences Department (BNL), Upton, New York. Further collaboration will be with the Region 2 Superfund Lower Passaic River Restoration Study Program Team, and the EPA ORD Superfund Innovative Technology Evaluation (SITE) Program.

II. Period of Performance:

The period of performance for this IAG will be from January 1, 2007 to June 30, 2007.

III. Level of Effort: (Amendment Amount)

The level of effort for this IAG budget period is not to exceed \$500,000

IV. Regional Background/Overview and Problem Statement:

Contaminated sediments in the rivers, lakes, and coastal waters of the United States are a major environmental problem (National Research Council, 1989, 1997). In addition, dredging of sediments from these waters is often necessary for maintenance of navigation channels and private berthing areas. The placement of the contaminated dredged material is difficult because of the requirements placed on both ocean, and upland placement by regulators.

The search for effective solutions for managing dredged material, which includes the steps (treatment train) of sediment handling, processing, decontaminating, and beneficial use of the product, is a major focus of federal, state and local governments as well as port users (e.g., the Port Authority of New York and New Jersey, USACE, NJDOT). The Water Resources Development Act (WRDA) of 1992 (Section 405C), 1996 (Section 226), 1999 (Section 218) charged the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) to demonstrate the feasibility of decontaminating estuarine sediments from the New Jersey/New York (NJ/NY) harbor. Another important aspect of the WRDA legislation is demonstrating beneficial use of the decontaminated sediment. The U.S. Department of Energy - Brookhaven National Laboratory (BNL) - provides technical project management and contracting and procurement services for EPA.

WRDA mandates demonstrations of one or more technologies that have the ability to decontaminate up to 500,000 cubic yards (cy) per year of sediment from the NJ/NY harbor with beneficial use applications. The WRDA Program has progressed through demonstrations of various technologies at both the bench- and pilot-scales of operation and has progressed to the stage of full/ commercial-scale applications processes that would have the capability to process up to 500,000 cy of sediment per year.

V. Program Development

The step-wise decontamination technology demonstration program has resulted in a reduction of the number of participants through several factors, including:

- technical performance
- demonstration costs
- public-private cost sharing
- beneficial use of treated material and potential markets
- public perception of the technology
- site availability
- corporate evaluations of the business potential for a long-term self-sustainable venture in dredged material decontamination.

Seven (7) bench-scale, and five (5) pilot-scale demonstrations have been completed. Two (2) full-scale demonstrations are presently in progress for FY 06/07. These full-scale technologies have undergone extensive testing under the EPA and NJDOT Office of Maritime Resources (OMR) Programs and have shown the most favorable outlook for commercial-scale applications for both navigational and possibly Superfund related sediments. These are the advanced sediment washing technology developed by **(1) BioGenesis Enterprises, Inc.**, and the thermo-chemical **(2) Cement-Lock Process** (rotary kiln) developed by the Gas Technology Institute **(GTI)**.

WRDA/EPA Program Responsibility:

U.S. EPA Region 2 (Dredged Material Management Team) - Program Lead

U.S. Department of Energy - Brookhaven National Laboratory (BNL).

Since 1993, BNL has provided technical project management and contracting/procurement services for EPA Region 2 on this project. BNL is managed by Brookhaven Sciences Associates, a consortium of Battelle and the State University of NY at Stony Brook.

A description of program accomplishments can be found at the project web site:
<http://www.bnl.gov/wrdadcon>.

VI. IAG FY 07 Background - Justification

The obligation of these funds provided by EPA Superfund (lower Passaic River Restoration Project account) is being targeted for the GTI thermo-chemical Cement-Lock process for processing of lower Passaic River, NJ sediment. In June 2006, BioGenesis Enterprises has completed a sediment washing processing demonstration of Superfund Passaic River sediment as part of the collaborative efforts with EPA Dredged Material Management Team, EPA Superfund, and NJDOT-Office of Maritime Resources (OMR). Processing of Passaic River sediments by BioGenesis was funded by NJDOT-OMR.

VII. Passaic River, NJ Contaminated Sediment Background - Justification

The present study defines the work to be performed to execute a decontamination technology large-scale demonstration on sediments dredged from the Passaic River, NJ at transported for processing at the existing GTI Cement-Lock rotary kiln facility at Bayonne, NJ. This will be an

important proof-of-principle step that could lead to use of the technology as part of a solution to remediation of Passaic River sediments under the EPA/NJDOT/USACE Superfund Focused Feasibility Study.

Like many urban rivers worldwide, the Passaic River contains severely contaminated sediments that affect aquatic life and limit recreational and economic uses of the river. The Passaic River is located within the NY-NJ Harbor Estuary, which has been cited as one of the most chemically polluted estuaries in the United States. The Passaic River Basin drains an area of 2421.6 km² of which 2038.3 km² are in New Jersey and 383.3 km² are in New York. Seven major tributaries connect to the main stem of the Passaic River before it empties into Newark Bay. The latter, a portion of the New York-New Jersey Harbor is surrounded by a population of more than 20 million and hosts concentrated refining and manufacturing activities.

The lower Passaic River consists of a 9.7 km (7 mi) reach in Newark, NJ and is in the U.S. industrial heartland with many chemical, paint, and pigment manufacturing plants, petroleum refineries, and other large industrial facilities sited along its banks. The industrialization of the area has influenced many negative changes on the river including habitat destruction, wetland drainage, land alteration, garbage and sewage disposal, and release of hazardous substances into the environment. Historically, water quality has deteriorated throughout the nineteenth century as raw sewage and industrial chemicals and their by-products were discharged directly into the river through sewers, industrial outfalls, and surface run-off.

Like other industrialized waterways, sediments in the Passaic River contain elevated concentrations of numerous toxic substances including, but not limited to, arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), zinc (Zn), bis (2-ethylhexyl) phthalate, PAHs, PCBs, dichlorodiphenyltrichloroethane (DDT), petroleum hydrocarbons, TCDDs/PCDFs (dioxins), pesticides, and chlorinated herbicides and phenols. Sources of contaminants include permitted discharges, surface water runoff, atmospheric deposition, and combined sewer outfalls (CSOs). Several of the region's most polluted sewer outfalls are also located along the lower Passaic River.

The cleanup of sediments in the river will require coordination on many different fronts. One important aspect is to devise means for disposal of contaminated material removed from the river. The GTI rotary kiln one technology that can potentially be applied to the highly contaminated sediments and soils to remove the contaminants and produce a material suitable for general beneficial use applications.

VIII. STATEMENT OF WORK

Thermo-Chemical Processing and Sediment Decontamination of Passaic River, NJ Contaminated Sediments at the GTI Rotary Kiln Facility, Bayonne, NJ

General Background:

Technology: *Cement-Lock* thermo-chemical manufacturing process uses a rotary kiln melter operating at temperatures of up to 2600°F. The process:

- (1) mixes sediment with modifiers to control slag melting temperature and viscosity,

- (2) melts the sediment-modifier mixture at specific conditions for decontamination while promoting specific chemical/physical reactions, and
- (3) rapidly cools the molten slag with water to immobilize the inorganic pollutants within the glassy *Ecomelt* matrix. State-of-the-art pollution control equipment includes a secondary combustion chamber for organic contaminant destruction, a lime injection system for acid-gas capture, a baghouse for particulate removal, and an activated carbon adsorption unit for capturing volatile metals such as mercury.

Beneficial Use: *Ecomelt* – A glassy pozzolanic material that is pulverized and blended with Portland cement to yield a construction-grade blended cement. The construction-grade cement product has physical properties that exceed the requirements of Portland cement and blended cement in American Society for Testing and Materials (ASTM) standards. Other interest is the utilization of this technology for processing of electronic (E) waste with steam and electric power co-generation.

GTI has been part of the EPA WRDA Sediment Decontamination program since 1995 and has undergone successful bench- and pilot-scale testing. Phases 1 and 2 of this project are being conducted in a collaborative effort between the EPA and NJDOT-OMR Sediment Decontamination Programs in demonstrating full-scale operation at the IMTT facility in Bayonne, NJ focusing on navigational and in the purpose of this IAG, Passaic River, NJ sediments.

Cement-Lock Process Detail:

The mixture of sediment and modifiers is conveyed to the rotary kiln melter by screw conveyor. The rotary kiln melter itself is maintained at a temperature of 2,400-2,600°F by combustion of natural gas with air and/or oxygen. This temperature is sufficient to yield a manageable viscosity melt and cause the modifier-sediment mixture to react. During processing, the modifier-sediment blend is thermo-chemically transformed from the recognizable mineral materials in the feed to a homogeneous melt. All nonvolatile heavy metals originally present in the sediment are incorporated into the melt matrix via a molecular replacement mechanism. The molten material moves through the kiln and exits by flowing over a weir. The molten material then falls into a plenum through high-pressure streams of water, which immediately quenches and granulates the melt. The quenched and granulated material is called *Ecomelt*. The *Ecomelt* is removed from the quench granulator by a drag conveyor, which also dewateres it.

Flue gas from the rotary kiln melter flows into the Secondary Combustion Chamber (SCC), which provides an additional 2 seconds of residence time at a minimum temperature of 2,200 °F to ensure complete destruction of any organic compounds that survive the severe conditions in the melter. Effluent from the SCC is rapidly cooled via direct water quench to prevent the formation or recombination of dioxin/furan precursors. Powdered lime is injected into the cooled gases to capture sulfur compounds and sodium chloride. The sulfur/salt/lime mixture is removed from the flue gas stream by a bag house. The collected bag house material is containerized and shipped off-site as waste material. This material represents less than 2% of the raw sediment volume. Volatile heavy metals, such as mercury, are removed from the flue gas by passing through a fixed bed of activated carbon. The activated carbon in the fixed bed will be periodically replaced and sent to an appropriate spent activated carbon reprocessor. Cleaned flue gas is vented to the atmosphere at about 300°F via an I.D. (induced draft) fan.

The major environmental impact of this technology is through the gaseous emissions produced. Elaborate controls are used on the exhaust gases to make sure that all environmental standards are met. The specific control equipment of the rotary-kiln plant consists of the following:

- ▶ A secondary combustion chamber (SCC) for destruction of any trace organic chemical that escape the reactive melter
- ▶ A spray tower for rapid quenching of the hot flue gas using direct water injection.
- ▶ A bag house dust collector for controlling particulate emissions
- ▶ An activated carbon bed for controlling volatile metal emissions
- ▶ A continuous emission monitor (CEM) to provide on-line monitoring of oxygen, carbon monoxide, and opacity from the flue gas at the system outlet (vent)

Phase 1 Full-scale Demonstration (2002-2005)

GTI carried out a full-scale demonstration project at the IMTT facility in Bayonne, NJ over 2002-2005. The work included permitting, public outreach, site preparation, mobilization of equipment, construction, shakedown operations, operations, and trouble-shooting. The operational testing concluded in March 2005 using navigational dredged material. The preliminary results show that satisfactory contaminant destruction efficiency was obtained for organic compounds and that metals were contained in the solid final slag.

Operational start-up problems occurred in the materials handling component for input to the kiln, removal of molten product from the exit of the kiln, and transport of the product material away from the water quench used to solidify the molten product. These problems have been addressed through subsequent tasks under previous IAGs with BNL and funding from the NJDOT-OMR. Under this IAG, the kiln will be used to process sediments dredged from the Passaic River in December 2005 under the NJDOT-OMR Passaic River to demonstrate that the GTI Cement-Lock technology can be applied to decontamination of the sediments removed during the potential remediation / restoration of this river.

The proposed project will be divided into two sections. First, steps will be taken to modify the facility to rectify the problems encountered during the initial phases of the demonstration project. The goal is to achieve steady-state operation of the facility as shown by processing of approximately 300 cy of navigational sediment from the Stratus Petroleum site in upper Newark Bay. This is the remaining dewatered sediment remaining from the 2003 GTI start-up efforts. This task is funded by the NJDOT-OMR. The second part of the work will employ the facility to process approximately 300 cy of dewatered sediments from the Passaic River. This task is to be funded by the present IAG. EPA Superfund Region 2 by way of this funding obligation will provide operational support in processing the Passaic River sediments. Figure 1 shows the major steps and decision points in the Passaic River sediment GTI Cement-Lock processing program.

Scope of Work Objectives:

The overall objectives of the project are to process sediment dredged from the Passaic River in December 2005 through the Cement-Lock demo plant to generate both operating and environmental data. During processing, the sediment will be converted into *Ecomelt*, a portion of which will be converted into construction-grade cement for a beneficial use demonstration.

The specific objectives carried out by NJDOT-OMR to facilitate this IAG are to:

- Complete the final designs, and implement equipment modifications and other necessary repairs to the Cement-Lock demo plant – specifically in the sediment and modifier feeding systems and the slag discharging system (COMPLETED – NJDOT-OMR).
- Conduct a test with the modified Cement-Lock demo plant equipment to confirm that the modifications are effective using Stratus Petroleum navigational sediment remaining from the previous test (about 100 yd³ of sediment) (IN-PROGRESS – NJDOT-OMR)

The specific objectives carried out under this EPA IAG funding obligation to BNL are to:

- Conduct an extended duration demonstration with the modified Cement-Lock demo plant with screened and mechanically dewatered Passaic River sediment (300 cy). (USEPA/BNL – this IAG)
- (EPA) Coordinate and facilitate with BNL and NJDEP the environmental and air (stack) sampling task to be conducted by the EPA SITE Program which will include a stack sampling, and residual mass-balance sampling and analysis plan. The work will be done in consultation between BNL, EPA, NJDOT-OMR, GTI and the EPA SITE Program.
- Conduct a beneficial use demonstration with *Ecomelt* produced from Passaic River sediments. This would entail the preparation of a construction-grade cement to be used on yet to be determined a public-works project.
- Update the operating and beneficial use economics of the Cement-Lock technology from the Phase I August 2006 deliverable to EPA/BNL as warranted by the processing/energy results from this demonstration.

BNL Project Management and Reporting. BNL will report on project progress to EPA submitting monthly status reports based on input from GTI, BNL, NJDOT-OMR and EPA. Also, in collaboration with EPA and NJDOT-OMR, BNL will oversee progress of changes to the kiln through progress reports from GTI and field visits to the site. A final report describing the entire Passaic River project will be submitted to BNL. Other activities for the final deliverable will be preparation of material and energy balances, metrics on environmental impacts, updated evaluation of process economics, and a beneficial use demonstration using a portion of the *Ecomelt* generated.

PROJECT TIME

The estimated time for completion of the project is 6 months.

PROPOSED BUDGET

The project budget requests \$50,000 for program support to BNL work on contracting and procurement services, and technical program management of the demonstration. An amount of \$450,000 is requested as funding for processing Passaic River sediment. The total project cost is \$500,000.

PROJECT PERSONNEL

The project principal investigator is Keith W. Jones, Ph.D. Dr Jones has been in charge of the BNL portion of the EPA Region 2 NY/NJ Harbor Contaminated Sediment Processing and Decontamination from its inception in 1994. Dr. Jones will be responsible for completion of the tasks defined in the Statement of Work.

PROGRAM CONTACTS

USEPA

Eric A. Stern
Regional Contaminated Sediment/WRDA Program Manager
U.S. EPA Region 2, Dredged Material Management Team
290 Broadway, NY, NY 10007
(212) 637-3806/3889(fax)
Stern.Eric@EPA.GOV

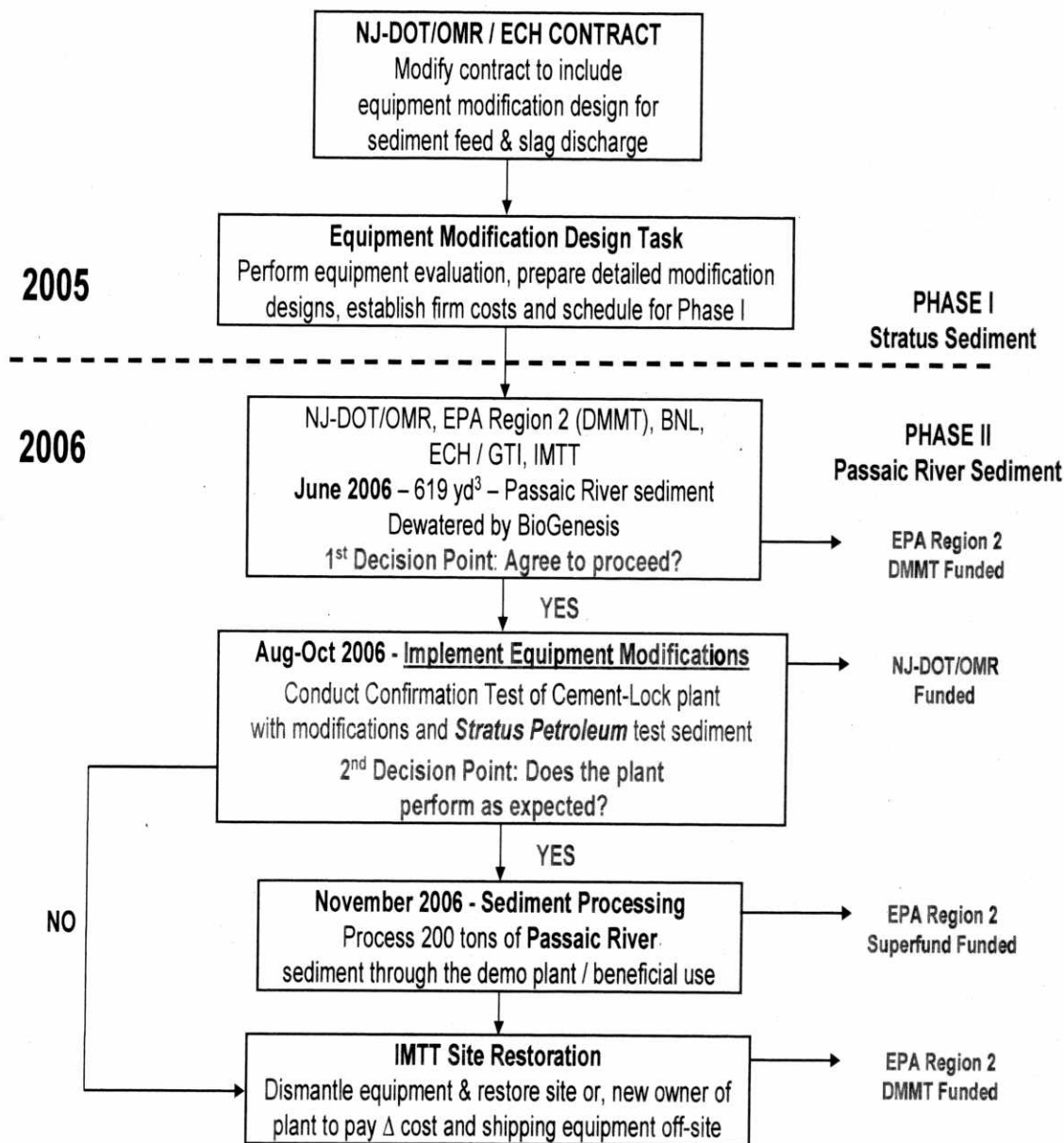
Brookhaven National Laboratory

Battelle Science Associates

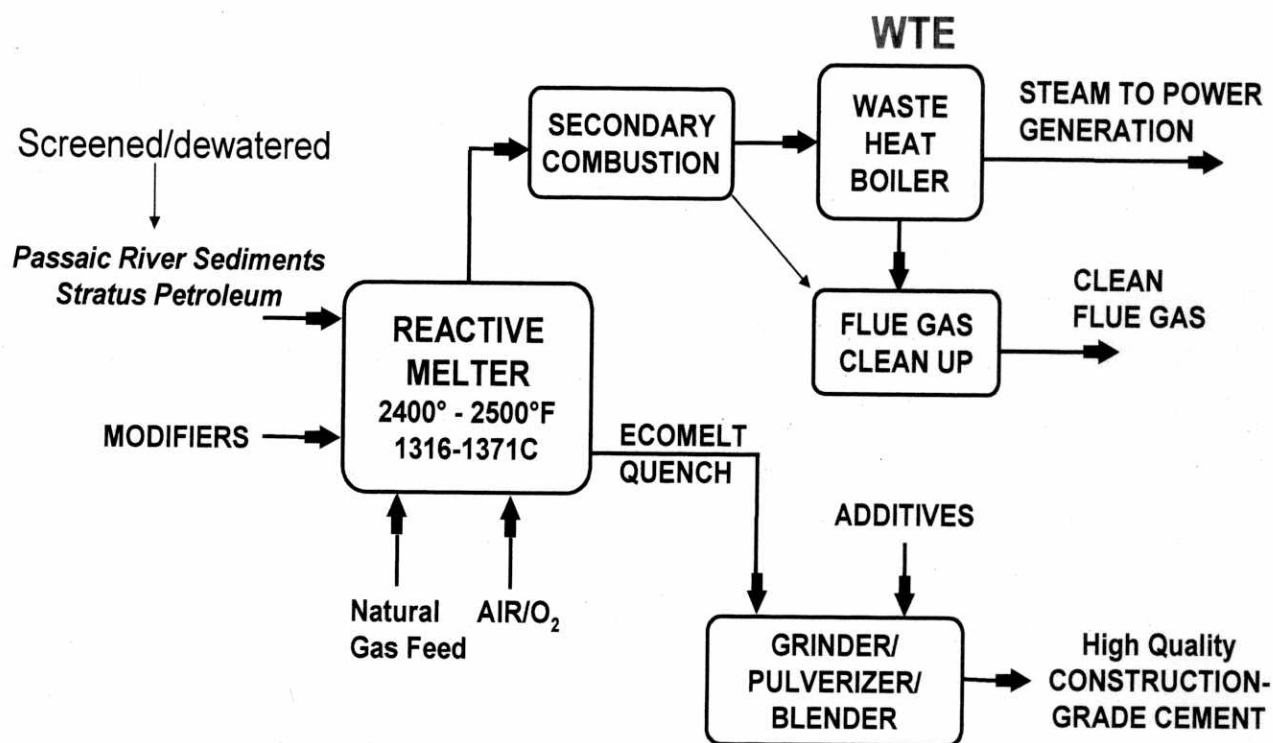
Keith W. Jones
Department of Energy - Brookhaven National Laboratory
Department of Applied Sciences, Bldg 901A
Brookhaven National Laboratory
Upton, NY 11973
(631) 344-4588/5271(fax)
KWJ@BNL.GOV

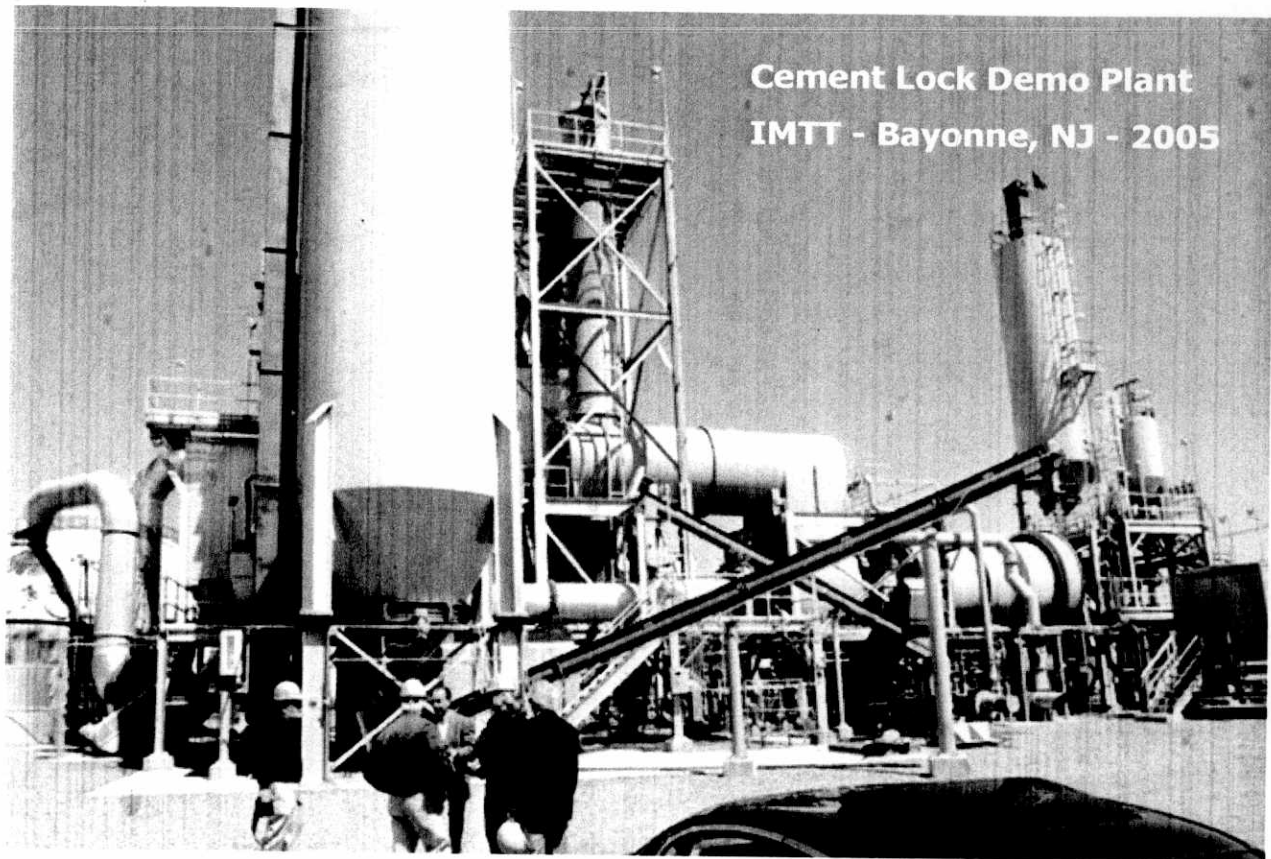
Figure 1.

Cement-Lock Technology – Sediment Decontamination Demonstration Project Decision Flow Diagram – Phases I & II Passaic River



Cement-Lock® Technology





CEMENT-LOCK ROTARY KILN FOR PROCESSING PASSAIC RIVER, NJ
CONTAMINATED SEDIMENTS

IMTT FACILITY – BAYONNE, NJ